The Cost of SBIRT Implementation in Mat-Su Primary Care Practices

Prepared for

Alaska Mental Health Trust Authority

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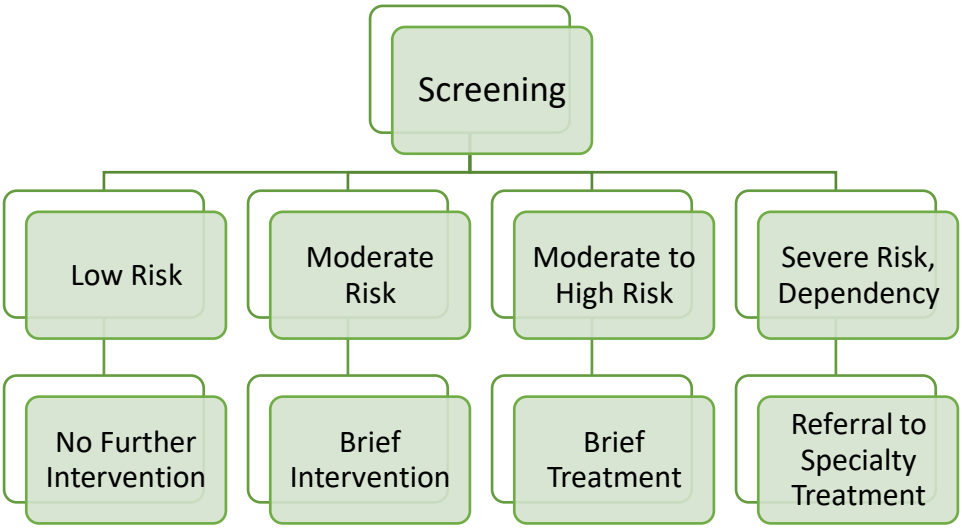
Introduction

The purpose of this report is to calculate the cost of alcohol Screening, Brief Intervention, and Referral to Treatment (SBIRT) in three primary care practices located in the Matanuska-Susitna area. Using Fleming et al. (2000)'s benefit-cost ratio of screening and brief physician advice in managed care settings, we estimated the dollar benefits potentially generated by SBIRT services.

What is SBIRT?

According to the Substance Abuse and Mental Health Services Administration - Center for Integrated Health Solutions [SAMHSA-HRSA], SBIRT is *"an evidence-based practice used to identify, reduce, and prevent problematic use, abuse, and dependence on alcohol and illicit drugs."* Patients are screened using a brief standardized assessment tool that asks about their alcohol and other substance use. Patients who screen positive are then offered brief, score-informed, behavioral counseling that could consist of brief intervention, brief treatment, or referral to specialty treatment. The effectiveness of screening and brief intervention in reducing unhealthy alcohol use are well documented in primary care (Williams et al., 2011; Babor et al., 2007; Kaner et al., 2007), physician offices (Flemming et al., 2002) and emergency departments (EDs) (Vaca, Winn, Anderson, Kim, and Arcila, 2011; Krupski et al., 2010; Désy and Perhats, 2008; Gentilello, Donovan, Dunn, and Rivara, 1999). Figure 1 summarizes the SBIRT processes.

Figure 1. SBIRT processes



Source: Substance Abuse and Mental Services Administration

Cost of SBIRT

Cost estimation methodology

The literature divides costing methodology into two approaches: (1) service-level calculation which estimates the cost of each specific SBIRT service and (2) program-level calculation which estimates the total cost of operating the program for a given amount of time. It is important to note that the costing methodology may affect cost estimates (Bray et al., 2014). Using the service-level method, Zarkin, Dunlap, and Homsi (2004) estimated a screening cost of $0.42 per patient in primary care settings. Gentilello, Ebel, Wickizer, Salkever, & Rivara (2005) estimated a screening cost of $16 per patient in emergency departments (ED's). Meanwhile, Kunz Jr, French, & Bazargan-Hejazi (2004) applied program-level method and estimated a total cost of $497 per patient in ED's. The data we collected allowed us to conduct a program-level calculation to estimate SBIRT total cost. We divide the total costs by the number of all screenings to estimate a cost per screened visit. Therefore, it is best to think of our estimates as reflecting cost per visit and not per patient. The literature we rely on typically estimates costs per patient which means that they allocate costs to the number of unique patients and not the number of overall visits.

Costs associated with SBIRT

Program-level costs that are associated with SBIRT can be categorized into *Start-up* costs and *Service-delivery* costs. *Start-up* costs involve labor cost and expenses incurred when planning and preparing upon SBIRT implementation. These include *Pre-implementation* planning and communicating, *Employee Training* and *Additional Expenses. Service-delivery* costs involve labor cost on *Administrative Tasks* that are related to SBIRT as well as on *Screening and Intervention.* Table 1 presents details of SBIRT *Start-up* and *Service-delivery* costs.

Cost-benefit analysis

Trials of alcohol and substance-use screening and intervention programs in various healthcare settings have been conducted in a growing number of clinics to evaluate the cost and benefits of SBIRT (Agerwala and McCance-Katz, 2012; Madras et al., 2009; Babor et al., 2007). Screening and Brief Intervention has been shown to be effective in alleviating the severity of drug and alcohol use (Miller and Wilbourne, 2002), reducing healthcare costs that are related to general health, mental health, employment and housing (Madras et al., 2009), illness, hospitalization and motor vehicle injuries

Table 1. SBIRT start-up and service-delivery costs

Start-up costs	Pre-implementation	- SBIRT policy and procedure development; - Electronic Health Record programming, research, testing, and troubleshooting; - Provider and patient support materials development.
	Employee Training	- Introductory training for all staff; - Advanced training for providers, mid-providers and medical support staff (optional).
	Additional Expenses	For instance: - Purchasing and modifying of the Electronic Health Record; - Printing fees of educational resources materials; - Hiring and labor cost for additional staff to support SBIRT-related patient information; - Paying overtime to SBIRT trainees.
Service delivery costs	Administrative Tasks	- Meeting and communication about SBIRT; - Coordinating/managing activities within clinic or between clinic and UAA; - Budgeting and reporting; - Improving process and problem-solving; - Monitoring activities, progress reporting/updates; - Participating in community outreach or other external activities related to SBIRT.
	Screening and Intervention	- Providing patient screening; - Patient charting; - Providing relevant level of intervention.

(Quanbeck, Lang, Enami, & Brown, 2010; Flemming et al., 2002), as well as reducing risks of physical trauma (Gentilello et al., 2005). Miller and Wilbourne (2002) cataloged the outcomes of alcohol treatment done in 361 clinical trials and proved Screening and Brief Intervention to be one of the most cost-effective psychosocial alcohol treatments available. Paltzer et al. (2017) conducted a cost-

effectiveness analysis on substance-use SBIRT services that were administered by paraprofessionals to Medicaid patients in 32 Wisconsin clinics. The authors found benefits attributed to SBIRT to be primarily based on decreased inpatient and outpatient healthcare utilization, and provided an annual estimation of $391 of SBIRT benefit for each Medicaid adult beneficiary. Quanbeck et al. (2010) researched the employer's perspectives on the value of SBIRT in reducing absenteeism and impaired presenteeism in workplace environment and estimated a net annual value stemming from SBIRT intervention to be $771 per employee.

In this analysis, SBIRT benefit-cost ratio considers the program costs versus associated benefits from reductions in healthcare utilization (Barbosa, Cowell, Bray, & Aldridge, 2015; Flemming et al., 2002). In the first large-scaled benefit-cost analysis on SBIRT trial for alcohol misuse in managed care setting, Fleming et al. (2000) discussed a $3.2 of benefits from avoided healthcare utilization for every $1 the clinic spent on SBIRT. The study suggested that the benefit-cost ratio could reach 5.6:1 if the reduction of crime and motor vehicle accidents was taken into consideration. However, the authors stressed that the benefit from the reduction of accidents was found not statistically significant in their study. Therefore, in our analysis, we will be using **3.2:1** as the ratio to calculate the potential dollars generated from SBIRT expenditure at the three Mat-Su clinics. We refer this amount as "societal benefits" throughout this analysis. Acknowledging benefit-cost ratio could be sensitive to each clinic's patient demographic and trial procedures, it is worth considering that the employment of Flemming et al. (2000)'s ratio in our analysis might underestimate or overestimate the actual economic benefits gained from Mat-Su' SBIRT. Thus, our estimation should be only interpreted as representing benefits achieved from a standard benefit-cost ratio. Additionally, there were variations in SBIRT protocols employed by Flemming et al. (2000) compared to ours. The categories we use are listed in Table 1. Nonetheless, we believe using Flemming et al. (2000)'s benefit-cost ratio remains a valid approach to calculate the societal benefits generated by each dollar spent on SBIRT activities.

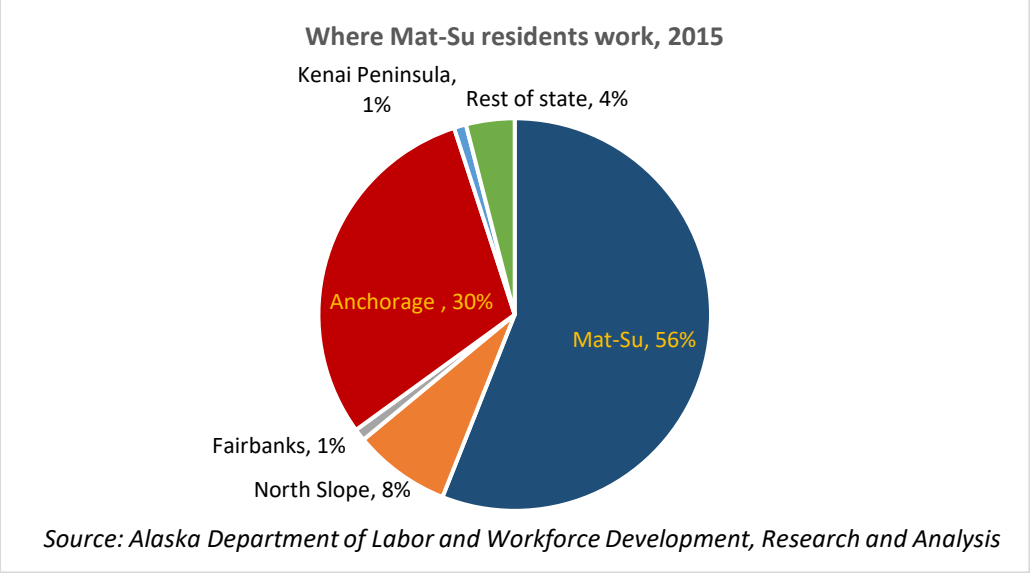
Matanuska-Susitna Borough

Overview

Mat-Su's land area covers 24,608 mi^2, ranking 7th among 29 Alaskan boroughs/census areas. Since 2015, The Mat-Su surpassed Fairbanks to become the second most populous borough in the state. In 2017, its population reached 104,116 (Alaska Department of Labor and Workforce Development [Alaska DOLWD], 2017). It also leads the state in economic growth (Sandberg, 2016). Among the residents, 56% works locally while 30% commute to Anchorage, and 8% commute to North Slope

borough for their jobs in oil industry (See Figure 2). The majority of jobs presented in Mat-Su area pertain to local services. In 2016, the average annual earnings were $41,832, compared with Anchorage's at $55,668, and North slope workers at $96,276 (Fried, 2017). Table 2 provides the Mat-Su 2016 demographic profile.

Figure 2. Where Mat-Su residents work, 2015



Source: Alaska Department of Labor and Workforce Development, Research and Analysis

Table 2. Mat-Su 2016 population estimates by sex, age, and race

Age	Total	Sex		Race				
		Male	Female	White	Black	Asian	American Indian or Alaska Native	Native Hawaiian or other Pacific Islander
0 – 11 years	22,343	11,577	10,766	17,378	692	880	3,096	297
12 - 17 years	10,494	5,536	4,958	8,212	313	431	1,411	127
18 – 64 years	66,372	34,061	32,311	56,256	1,221	1,757	6,662	476
65+ years	11,282	5,714	5,568	10,253	139	176	685	29

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section.

DOLWD's note:

These data were developed through a combination of estimates from the Alaska Department of Labor and Workforce Development and the U.S. Census Bureau. Each race category includes individuals who identify themselves as one-race only or in-combination-with another race. The estimates presented in Table 2, therefore, are higher than the population because multi-race individuals have multiple responses.

Mat-Su's healthcare

In 2016, there were 122 physicians who provide direct patient care in the Mat-Su borough. Among those, 48 were primary care physicians (Skillman and Dahal, 2016). Table 3 shows the Mat-Su Health Care Access Indicators, Health Care Resources and Health Care Workforce information in comparison with statewide and nationwide (Alaska Department of Health and Social Services [Alaska DHSS], 2016).

Table 3. Mat-Su health care system information (2016)

Health Care Access Indicators			
	Mat-Su Borough	**Alaska**	**US**
Population below poverty level	10.2%	10.1%	15.6%
Population without health insurance	19.2%	19.1%	14.2%
Population who unable to afford to see a doctor	15.4%	13.6%	13.1%
Population who received health care in the past year	74.2%	79.8%	87.1%

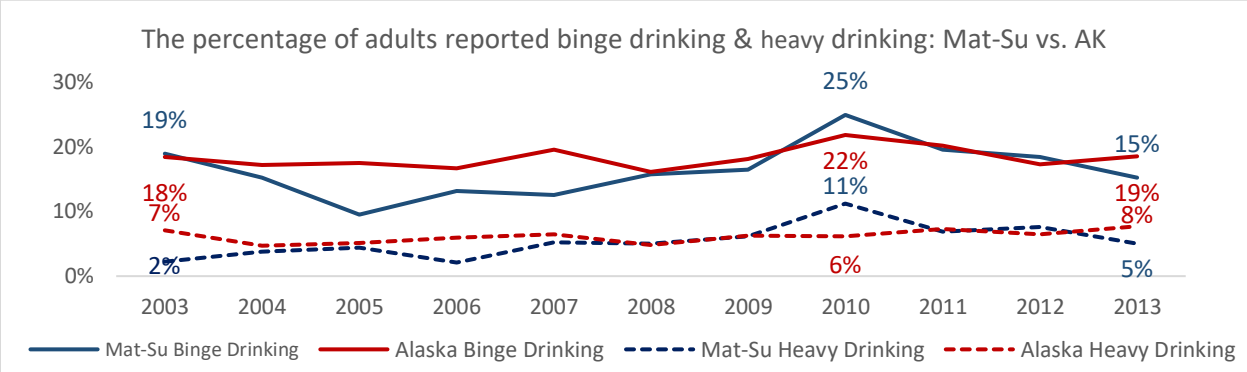
Health Care Resources			**Health Care Workforce** Licensed health care providers per 1,000 population		
	Mat-Su	**Alaska**		**Mat-Su**	**Alaska**
Community health center sites	3	156	Physicians (DO or MO)	1.4	2.7
Hospital(s)	1	24	Nurses (RN)	10.6	10.7
			Dentists	0.5	0.8
Community mental health center(s)	1	35	Mid-level providers (Physician Assistant or Nurse Practitioner)	1.3	1.5

Source: Alaska Department of Health and Social Services, University of Washington – Center for Health Workforce Studies.

Alcohol misuse

The Mat-Su Health Foundation identified misuse of drug and alcohol as the most serious health-related concerns for Mat-Su borough. According to the Behavioral Risk Factor Surveillance System [BRFSS], the prevalence of both binge drinking [6]and heavy drinking [7]among Mat-Su adults (18+) has fluctuated over the last decade, peaked in 2010, and been trending downward. In 2013[8], there were 15.2% of Mat-Su adults who had been binge drinking and 5% who had been heavy drinking during the prior 30 days (Mat-Su Health Foundation, 2013). Though BRFSS's health indicator report of alcohol consumption by sex is not available at the borough level, state-level report showed 25.6% of male adults and 14.3% of female adults admitted to having engaged in binge drinking during the previous month (Alaska DHSS, 2017). Binge drinking among youth is also concerning, with 17.3% of Mat-Su high school students indicating that they have engaged in binge drinking during the previous month (Alaska DHSS, 2015). Figure 3 provides a comparison of high-risk drinking behaviors in adults between Mat-Su residents and those residing in the rest of the state. Table 4 provides the number of individuals who were involved in high-risk drinking in Mat-Su and statewide overtime.

Figure 3. The percentage of adults who reported binge drinking and heavy drinking in Mat-Su vs. Alaska, 2003-2013



Source: Alaska Department of Health and Social Services

[6] BRFSS's definition of binge-drinking varied slightly overtime. From 1991 through 2005 the binge drinking was defined as "adults (men and women) aged 18 years and older who consumed five or more drinks on one occasion within the last 30-day period." From 2006, the definition of binge drinking has been men aged 18 years and older who consumed five or more drinks on one occasion or women aged 18 and older who consumed four or more drinks on one occasion within the past 30-day period.

[7] Heavy drinking is defined as having more than two drinks per day for men, or more than one drink per day for women.

[8] More up-to-date data for several categories, such as binge drinking rates of Alaska and Mat-Su adults, are available at http://ibis.dhss.alaska.gov/indicator/complete_profile/AlcConBinDri.html.

Table 4. The number of adults who reported high-risk drinking behaviors

Year	Mat-Su		Alaska	
	Binge Drinking	Heavy Drinking	Binge Drinking	Heavy Drinking
2003	8,778	193	84,865	6,025
2004	7,432	282	81,111	3,812
2005	4,932	217	83,950	4,281
2006	7,191	151	81,446	4,805
2007	7,060	367	96,327	6,261
2008	9,179	459	80,708	3,874
2009	9,871	602	92,569	5,739
2010	15,497	1,736	113,982	6,953
2011	12,541	865	107,848	7,873
2012	12,145	923	93,770	6,095
2013	10,270	513	100,960	7,774
2014	11,296	-	110,692	-
2015	11,728	-	109,251	-
2016	12,223	-	100,182	-

Sources: ISER tabulations from Alaska Department of Labor and Workforce Development and Alaska's Behavioral Risk Factors Surveillance System's reports.

Methodology

Study participants

A program-level approach was used to estimate the total SBIRT cost within each of the three primary care practices serving the Mat-Su population that were participating in an SBIRT-implementation study between 2015 and 2017.

Data collection

Cost data were collected from the participating practices via interviews with at least 4 employees at each clinic, including a clinic director, a medical director, a healthcare provider and a medical assistant (total interviews = 13). Key informants were asked structured questions that included: wage and benefit rate of employees who were involved in SBIRT; time allocated for SBIRT *Pre-*

implementation activities (1), *Training* (2), *Administrative Tasks* (3), *Screening and Intervention* (4) and *Additional Expenses* related to SBIRT (5). In addition, each clinic provided data on patient demographic profile, visit counts, training attendees list, type of training and time duration of training. Table 5 shows our key informants' job type at each clinic.

Table 5. The key informants' job type

Clinic	Positions
Site A	Clinic Director/Medical Director
	Physician Assistant
	Medical Assistant
	Behavioral Health Specialist
	Quality Assurance Manager
Site B	Project Manager
	Medical Director
	Nurse Practitioner
	Medical Assistant
Site C	Clinic Director
	Physician
	Administrator Assistant/Nurse
	Medical Assistant

See Appendix A for interview instrument.

Data quality varied vastly among sites. For example, though we were not scheduled to talk to the Physician and Nurse Practitioner at site A, the Clinic/Medical Director who was very involved with SBIRT, was still able to provide estimates on behalf of these positions. Meanwhile, at site C, the provider interviewee was not directly involved in SBIRT, therefore, was not able to report any SBIRT-associated cost estimate. Though we have followed up with the Project Manager at site B and Clinic Director at site C to fill up missing data, there might have been inevitable shortcomings in documenting the role of other positions involved in *Screening and Intervention* tasks.

Data analysis

Definitions

Data in this report are presented using the following definitions:

- An *eligible visit* is an encounter with a patient who falls in the age range for SBIRT. Site A and B included SBIRT services for patients who are 12 or older, while Site C included patients who are 18 or older. Throughout the year, a patient may have multiple visits. In our calculation, we treated each visit independently, regardless if that was the first-time or repeated one.
- A *screening* is an encounter in which the patient participated in SBIRT screening. Similar with *eligible visit*, a patient may have multiple screenings. We treated each *screening* independently, regardless if that was the first-time or repeated one.

Cost components

Our calculation for the cost to implement SBIRT relies on 4 components: the amount of time each clinic's personnel allocated for SBIRT activities, their hourly wage, months of program implementation and the amount of fixed expenses to support SBIRT. The methodology that determines our coding consistency and reliability are explained below.

Estimating time

As time estimation was entered into the five major cost categories (see Table 1), we were able to quantify the total hours each personnel spent on start-up activities, as well as, their monthly average of service-delivery time. There are several conditions to keep in mind when interpreting our results:

- Screening and Intervention time: in a typical screened visit, a patient receives service from a Medical Assistant, a Provider OR a Mid-provider, and optionally a behavioral health specialist (only applied at site A). Provider/Mid-provider's time for *Screening and Intervention* varies depending whether it was the Physician, Physician Assistant, Nurse Practitioner or Register Nurse who conducts the process. Where there was more than one estimation for the provider/mid-provider's time, we constructed a range of associated costs based on the given data. For example, when estimating provider/mid-provider's intervention time, if the Medical Director said 5 minutes and Physician Assistant said 10-15 minutes, we calculated cost accordingly by lower level (5 minutes), middle level (10 minutes) and upper level (15 minutes).

- When a time range was given, e.g, 1-2 hours, we calculated cost accordingly by lower level (1 hour), middle level (1.5 hours) and upper level (2 hours).
- Our calculation included 15 months of SBIRT adoption for site A and B, and 12 months for site C.

Calculating wage and benefit

We used the clinic director's information on current wage (2017) to calculate hourly rate and per minute rate for each position involved in SBIRT. Where wage data are missing, we used the Alaska Department of Labor and Workforce Development's Alaska Local and Regional Information (ALARI) database to obtain wages for the occupation of interest. Where ALARI's data are not available, we employed the rate of the same position provided at the other study site. A 25% of benefit rate was employed when calculating labor cost at each clinic.

- Similar to provider/mid-provider's time, their wage varies depending on the job type of the person who conducted the process. Where there was more than one provider/mid-provider job types listed under *Screening and Intervention*, we took an average wage to calculate cost. For example, when the Physician ($77/hour) and the Physician Assistant ($55/hour) do screening and intervention interchangeably, we used $66/hour as the average wage for our calculation.

Calculating total cost and potential societal benefits

- To calculate *Pre-implementation* cost, we multiplied total hours each employee spent in SBIRT preparation process by their hourly rates (benefit included). Summing across all involved positions yielded the dollars spent on all *Pre-implementation* tasks.
- To calculate the cost of *Training*, the hours of training were multiplied by the sum of training attendees' hourly rates (benefit included).
- *Administrative Tasks*, typically performed by the Clinic Director, Quality Assurance Manager and Project Manager, cover management and coordination to support SBIRT practices. The associated cost was calculated by multiplying the monthly hours these individuals spent on SBIRT-exclusive administrative processes by their wages and the months of program implementation.
- We calculated the cost of positive screenings and negative screenings separately. In this study, except for one occasion at Site A (indicated in Table 13), *Intervention* only refers to conversation, feedbacks and/or referral to treatment that follows when a patient's screening results is *positive*. Multiplying the per-visit cost for a positive (or negative) visit by the number of

positive (or negative) visits by month yields monthly cost for positive (or negative) screening and intervention.

- Additional expenses are sum of all other costs that were not listed under above categories.
- Where a range of time estimates was given, the proposed total cost was based on middle-level estimate.

Table 6 summarizes cost formulas described above.

Table 6. Cost formula

Task	Formula
Pre-implementation	Sum ($wage_a$ * $hour_a$, $wage_b$ * $hour_b$, …)
Training	Hours of training * Sum ($wage_a$, $wage_b$, …)
Administrative Tasks	Sum ($wage_a$*monthly $hours_a$, $wage_b$*monthly $hours_b$, …) * Months of implementation
Screening and Intervention for Positive Case	Sum (time per screening and $intervention_a$ * $wage_a$, time per screening and $intervention_b$ * $wage_b$, ...) * Number of positive cases
Screening for Negative Case	Sum (time per $screening_a$ * $Wage_a$, time per $screening_b$ * $Wage_b$) * Number of negative cases
Additional Expenses	Sum (other costs)

Note: - Wage included benefit
- a, b: employees who involved in the process

- Total cost was a sum of all cost categories: *Pre-implementation, Training, Administrative Tasks, Screening and Intervention* and *Additional Expenses*. The formula to calculate total cost is the following:

TOTAL SBIRT COST = Pre-implementation Cost + Training Cost + Administrative Cost + (Monthly Screening and Intervention Cost * Months of SBIRT Implementation) + Additional Expenses

It is important to note that the cost structure of Screening, Brief intervention, and Referral to Treatment is complex and discontinuous of patient flow (Bray et at., 2014). These factors are determinants which might drive annual operating costs to be higher than the costs of actual services. The formula to calculate the societal benefits stemming from SBIRT is the following:

SOCIETAL BENEFITS = TOTAL SBIRT COST * 3.2

Findings

We will present our findings for each site separately.

Site A

Patient demographic and screening rates

At site A, the total number of eligible visits from December 2015 to February 2017 was 5,581. Of those, 5249 were screened.

Screening rates

Screening rates were consistently high across all demographic groups. The average monthly screening rate of all patient groups was 94.1%. The difference between male vs. female was not significant, only by 0.1 percentage point. In terms of age groups, 12-17 years-old had the highest screening rate (97.1%), followed by the 65+ years-old (95.7%) and 18-64 years-old (93.9%), respectively. Among race groups, American Indian/Alaskan Native had the highest (95%) while Asian received the lowest screening rate (86.7%).

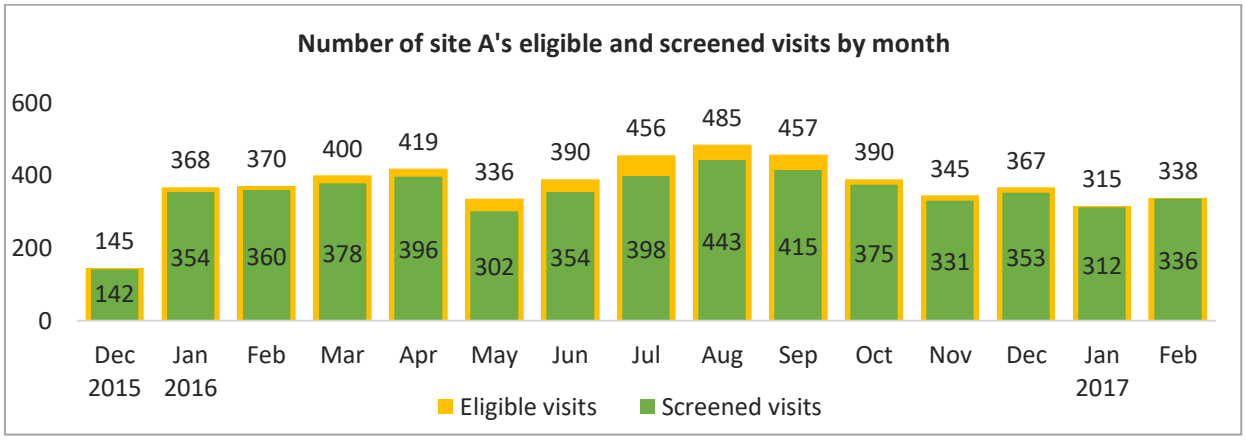
Table 7A. Eligible visits and screening rates by sex and age at site A

	Total	Sex		Age Group		
		Male	Female	12-17	18-64	65+
Eligible visit						
Count	5,581	2,564	3,017	245	4,034	1,280
Screening						
Count	5,249	2,414	2,835	238	3,786	1,225
% of eligible visits	**94.1%**	**94.1%**	**94.0%**	**97.1%**	**93.9%**	**95.7%**
Positive screening						
Count	417	241	176	13	353	51
% of screenings	**7.9%**	**10.0%**	**6.2%**	**5.5%**	**9.3%**	**4.2%**
Negative screening						
Count	4,832	2,173	2,659	225	3,433	1,174
% of screenings	**92.1%**	**90.0%**	**93.8%**	**94.5%**	**90.7%**	**95.8%**

Table 7B. Eligible visits and screening rates by race at site A

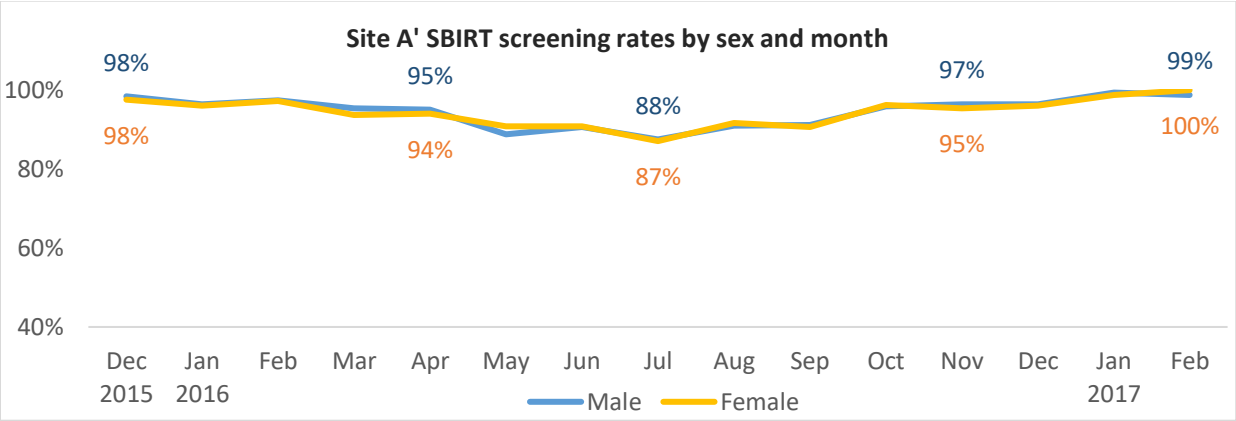
	Race					
	White	**Black**	**Asian**	**AIAN**	**NHPI**	**Others**
Eligible visits						
Count	5,096	42	30	240	8	165
Screening						
Count	4,802	38	26	228	7	148
% of eligible visits	**94.2%**	**90.5%**	**86.7%**	**95.0%**	**87.5%**	**89.7%**
Positive screening						
Count	389	2	0	16	0	10
% of screenings	**8.1%**	**5.3%**	**0.0%**	**7.0%**	**0.0%**	**6.8%**
Negative screening						
Count	4,413	36	26	212	7	138
% of screenings	**91.9%**	**94.7%**	**100.0%**	**93.0%**	**100.0%**	**93.2%**

Figure 4. Number of site A's eligible visits and screenings by month



Screening rates were consistently high across months and quite similar between male and female. Screening rates hit lowest point in July 2016 (Male: 87.5%; Female: 87.1%) and peaked in January 2017 for males (99.4%) and February 2017 for females (100%).

Figure 5. Site A' SBIRT screening rates by sex and month

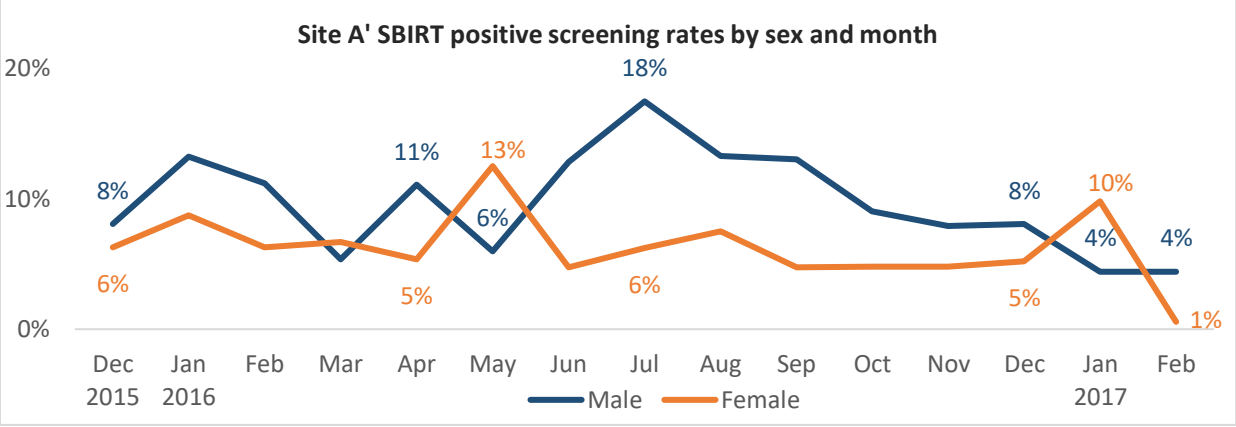


Positive results

As shown in Table 7A and B, across all groups, 7.9% of screenings had positive results. Ten percent of male screenings resulted positive, which surpassed female rate by about 4 percentage points. Adults 65+ screened positive (4.2%) less than half as often as all other adults (9.4%). Among all race groups, Whites received the highest percentage of positive results (8.1%), followed by patients identifying as Alaska Native/American Indian (7%). No positive screens were found for Asian and Native Hawaiian/Pacific Islander. It is important to note that White patients comprised 91.3% of SBIRT eligible visits at site A.

The positive screening rates fluctuated across months for both males and females. Compared to their counterpart, males had higher positive screening rates in almost every month, except March 2016, May 2016 and January 2017. Male positive screening rates peaked in July 2017 at 17.5% while female rates peaked in May 2017 at 12.5%.

Figure 6. Site A' SBIRT positive screening rates by sex and month



Cost of SBIRT

Start-up cost

Pre-implementation

Table 8. SBIRT pre-implementation cost at site A

Position	Time	Hourly rate	Benefit rate	Cost
Clinic Director	10 hours	$75	25%	$938
Quality Assurance Manager	8 hours	$24		$240
Physician Assistant	6 - 8 hours	$55		$413 - $550
Medical Assistant	2 hours	$17		$43
Behavioral Health Specialist	1 hour	$40		$50
Total Pre-Implementation Cost:				*Upper level:* ***$1,824*** *Middle level:* ***$1,756*** *Lower level:* ***$1,687***

Introductory training

Table 9. SBIRT introductory training cost at site A

Position	Number of training attendees	Time	Hourly rate	Benefit rate	Cost
Admin	6	4 hours	$16-$38*	25%	$699
Dental Assistant	1		$15		$75
Dentist	1		$72		$360
Director/Manager	5		$24 - $75		$1,414
Medical Assistant	7		$17 - $26*		$685
Patient Services/Support	3		$15		$225
Physician	1		$77		$385
Physician Assistant	4		$55		$1,100
Registered Nurse	1		$30		$150
Social Worker/Behavioral Health	3		$22* - $40		$420
Others	2		$0		$0
Total Introductory Training Cost:					***$5,515***
* *Wage information achieved from ALARI*					

Advanced training

Table 10. SBIRT advanced training cost at site A

Position	Number of training attendees	Time	Hourly rate	Benefit rate	Cost
Medical Assistant	9	1 hours and 15 minutes	$17 - $26*	25%	$267
Nurse Practitioner	1		$55		$86
Physician	1		$77		$120
Physician Assistant	2		$55		$172
Registered Nurse	4		$30		$188
Social Worker/Behavioral Health	3		$22 - $40		$131
Total Advanced Training Cost:					***$964***
* *Wage information achieved from ALARI*					

Additional expenses

Table 11. SBIRT additional expenses at site A

Additional expenses	Cost
Printing of education resources	$1,100
Purchase and/or modification of the electronic health record	$5,000
Total Additional Costs:	***$6,100***

Note: Besides expenses listed above, the Clinic Director mentioned a cost of "a few thousands" to recruit and pay for an additional employee to work on Internet information for SBIRT patients. Because we were unable to clarify this amount in our follow-up, we left these *few thousands* out of the calculation.

Service-delivery cost

Administrative, meeting and contact

Table 12. SBIRT administration cost at site A

Position	Administrative time per month	Months of implementation	Hourly rate	Benefit rate	Cost
Clinic Director	4 hours	15 months	$75	25%	$5,625
Quality Assurance Manager	1 hour and 30 minutes		$24		$686
Total Administrative, Meeting and Contact Monthly Cost:					***$6,311***

Screening and intervention

Table 13. SBIRT screening and intervention cost per visit at site A

Position	Time spent for SBIRT screening per visit (minutes)		Time spent for SBIRT intervention per visit (minutes)	
	Positive result	Negative result	Positive result	Negative result
Medical Assistant	2	0.5	0.5	0
Provider	2	0	5 - 15	0 - 5
Social Worker/Behavioral Health Specialist	2	0	0 - 15*	0
Total Screening and Intervention Cost if Positive:				*Upper Level:* ***$35.8*** *Middle Level:* ***$20.9*** *Lower Level:* ***$11.1***
Total Screening and Intervention Cost of Negative:				*Upper Level:* ***$6.3*** *Middle Level:* ***$3.2*** *Lower Level:* ***$0.2***

* A small portion of positive patients, whose results are severe, received Behavioral Health consultancy. This method of intervention, requiring up to 15 minutes of Behavioral Health Specialist's time, is reflected in upper-level cost.

Multiplying the middle-level estimate for positive and negative cases by corresponding numbers of visits by month yields the monthly cost of *Screening and Intervention* services. *Screening and Intervention* cost was lowest in the first month of implementation - December 2015 ($635) and highest in August 2016 ($2,227). These were also months which had the lowest and highest number of screenings. Figure 7 presents *Screening and Intervention* cost at site A by month. Table 14 provides the number of screenings by month and associated cost.

Figure 7. Site A's alcohol-use screening and intervention cost by month – Middle level

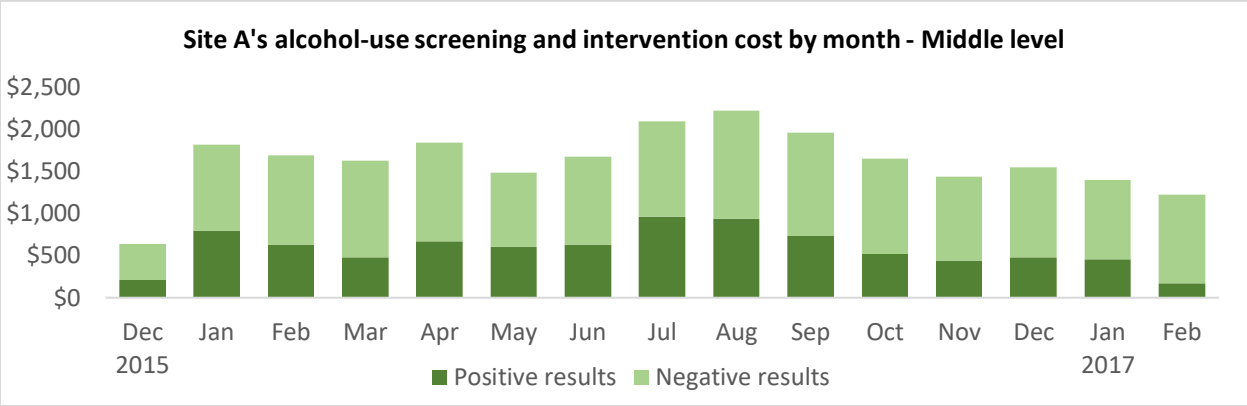


Table 14. Number of alcohol-use screenings and associated cost at site A

Month	Screened visits	Screened visits with positive results	Positive screening and intervention cost	Negative screening cost
Dec 2015	142	10	$209	$426
Jan 2016	354	38	$794	$1,021
Feb	360	30	$627	$1,066
Mar	378	23	$481	$1,147
Apr	396	32	$669	$1,176
May	302	29	$606	$882
Jun	354	30	$627	$1,047
July	398	46	$961	$1,137
Aug	443	45	$941	$1,286
Sep	415	35	$732	$1,227
Oct	375	25	$523	$1,131
Nov	331	21	$439	$1,001
Dec	353	23	$481	$1,066
Jan 2017	312	22	$460	$937
Feb	336	8	$167	$1,059
Total (15 months)	**5,249**	**417**	**$8,715**	**$15,607**

Total cost

Our calculation found the total cost of SBIRT at site A during the first 15 months was **$44,968**. Dividing this by the number of all screened visits would yield a total cost of ***$8.6*** for each.

Table 15. Total SBIRT cost at site A from December 2015 to February 2017 (15 months)

	Pre-implementation	Training		Admin	Screening and intervention	Additional expenses
		Introductory	Advanced			
Total	**$1,756**	**$5,515**	**$964**	**$6,311**	**$24,322**	**$6,100**
Per Unit					$20.9 per visit with positive result $ 3.2 per visit with negative result	
Percent	3.9%	12.3%	2.1%	14%	54.1%	13.6%

Societal benefits

We applied Fleming et al. (2000)'s benefit-cost ratio to estimate the potential benefit dollars generated by SBIRT. Table 16 presents societal benefits based on future cost reductions in healthcare utilization owing to SBIRT practices at site A.

Table 16. Societal benefit dollars generated from SBIRT at site A

Total SBIRT cost	Benefit – cost ratio	Benefit dollars generated from SBIRT
$44,968	**3.2:1**	**$143,898**

Site B

Patient demographic and screening rates

At site B, the total number of eligible visits from June 2016 to August 2017 was 4,602. Of those, 1,403 were screened.

Screening rates

The average screening rate for all groups was 26.7%. The screening rate for males was 4 percentage points higher than that for females.

Table 17A. Eligible visits and screening rates by sex and age at site B

	Total	Sex		Age Group		
		Male	Female	12-17	18-64	65+
Eligible visit						
Count	5,366	1,872	3,494	3	4,191	1,172
Screening						
Count	1,434	549	885	3	1,075	356
% of eligible visits	**26.7%**	**29.3%**	**25.3%**	**100%**	**25.7%**	**30.4%**
Positive screening						
Count	173	90	83	0	133	40
% of screenings	**12.1%**	**16.4%**	**9.4%**	**0%**	**12.4%**	**11.2%**
Negative screening						
Count	1,261	459	802	3	942	316
% of screenings	**87.7%**	**83.2%**	**90.4%**	**100%**	**87.6%**	**88.8%**

Table 17B. Eligible visits and screening rates by race at site B

	Race					
	White	Black	Asian	AIAN	NHPI	Others
Eligible visits						
Count	4,825	64	84	98	25	270
Screening						
Count	1,291	**26**	**21**	**5**	**0**	**91**
% of eligible visits	**26.8%**	**40.6%**	**25%**	**5.1%**	**0%**	**33.7%**
Positive screening						
Count	160	7	2	0	0	4
% of screenings	**12.4%**	**26.9%**	**9.5%**	**0%**	**N/A**	**4.4%**
Negative screening						
Count	1,131	19	19	5	0	87
% of screenings	**87.6%**	**73.1%**	**90.5%**	**100%**	**N/A**	**95.6%**

Among age groups, 25.7% of the 18-64 years-old group were screened, compared with 30.4% in 65+ group. There were only 3 visits made by 12-17 years-old patients, which were all screened. Among race groups, African Americans have the highest average screening rate (40.6%). None of Native Hawaiian and Pacific Islander (NHPI) and only 5.1% of American Indian and Alaska Native (AIAN) participated in SBIRT screening.

Screening rates were modest across months with quite similar patterns shared by males and females. Screening rates peaked in January 2017 (Males: 60.5%; Females: 44.8%) and hit the lowest point in July 2017 (Male: 18.5%; Female: 15.7%). Screening rates for males was slightly higher than females in almost every month.

Figure 8. Number of site B's eligible visits and screenings by month

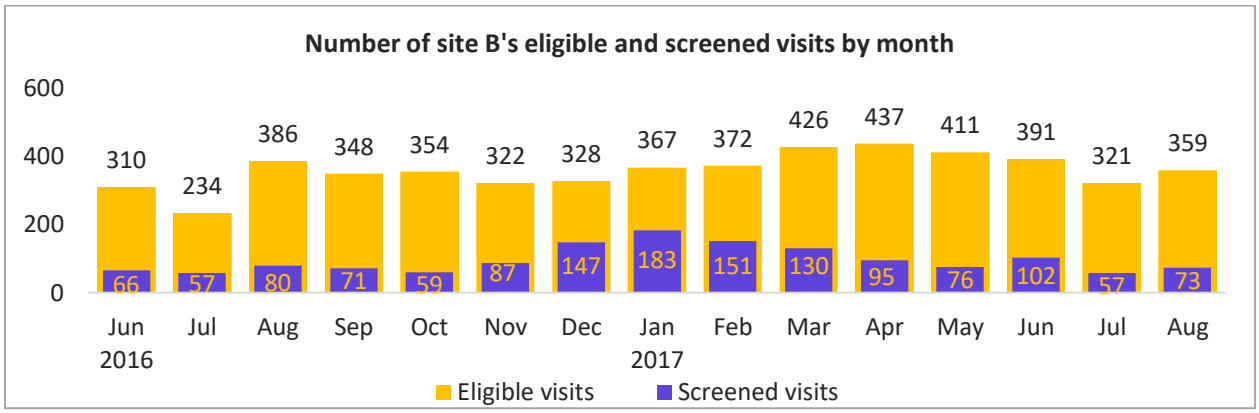
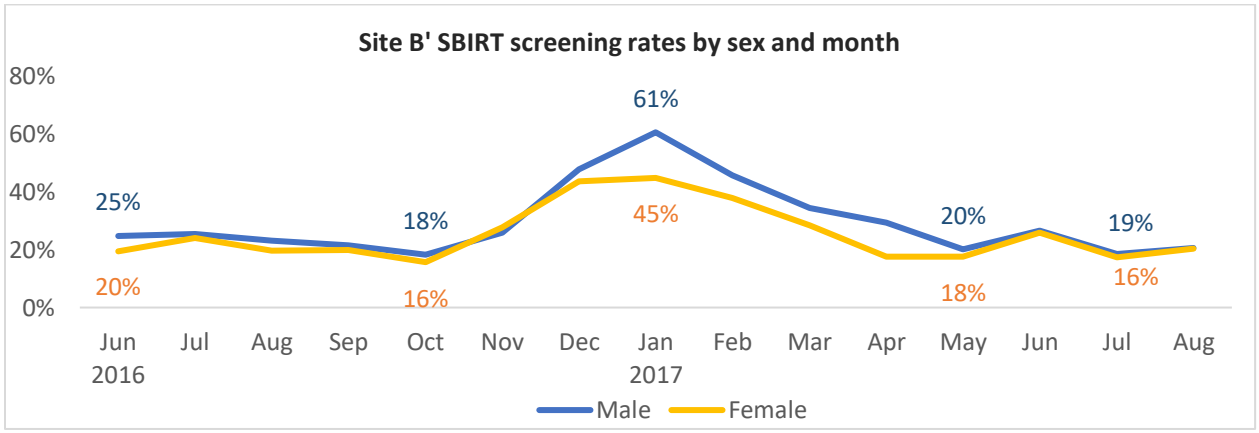


Figure 9. Site B' SBIRT screening rates by sex and month

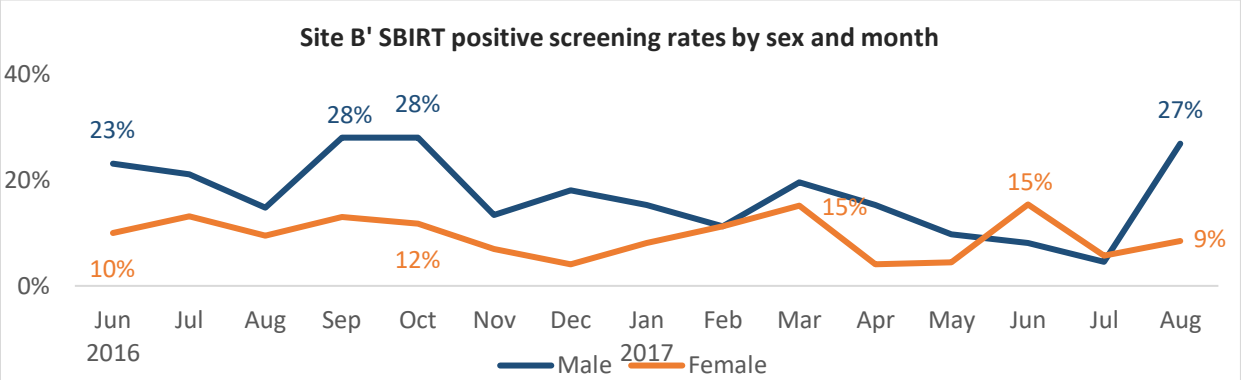


Positive results

As shown in Table 17A and B, across all groups, 12.1% of screenings had positive results. Sixteen point four percent of male screenings resulted positive, which exceeded the female rate by 7 percentage points. Adults 65+'s positive rates were slightly lower than all other adults', by only 1.2 percentage points. Among all race groups, African Americans received the highest percentage of positive results (26.9%). None of American Indian/Alaska Native and Native Hawaiian/Pacific Islander screenings resulted positive. It is important to note that White comprised 90% of eligible visits at Site B.

Positive screening rates fluctuated across months for both males and females. The rates for males were consistently higher than that for females, except for June and July 2017. Male positive screening rates peaked in September, October 2016 and August 2017. Female positive screening rates peaked in March and June 2017.

Figure 10. Site B's SBIRT positive screening rates by sex and month



Cost of SBIRT

Start-up cost

Pre-implementation

Table 18. SBIRT pre-implementation cost at site B

Position	Time	Hourly rate	Benefit rate	Cost
Project Manager	10 hours	$18.5	25%	$231
Medical Director	3 hours	$84.1		$315
Nurse Practitioner	1 hour	$38		$48
Total Pre-Implementation Cost:				***$594***

Training

Table 19. SBIRT training cost at site B

Position	Number of training attendees	Time	Hourly rate	Benefit rate	Cost
Care Manager/Patient Educator Outreach	2		$22		$165
Manager/Director	4	3 hours	$18.5 - $84	25%	$630
Medical Assistant	7		$17		$446
Registered Nurse	1		$28		$105
Nurse Practitioner	1		$38		$143
Physician Assistant	2		$34		$255
Social Worker/ Behavioral Health	3		$29		$326
Other	1		$0		$0
Total Training Cost:					***$2,070***

Additional expenses

Table 20. SBIRT additional expenses at site B

Additional expenses	Cost
Paying tech person to use the electronic health record	$152
Printing of education resources	$25
Total additional cost:	***$177***

Service-delivery cost

Administrative, meeting and contact

Table 21. SBIRT administration cost at site B

Position	Time per month	Months of implementation	Hourly rate	Benefit rate	Cost
Project Manager	2.5 hours	15 months	$18.5	25%	$853
Total Administrative, Meeting and Contact Monthly Cost:					***$853***

Screening and intervention

Table 22. SBIRT screening and intervention cost per visit at site B

Position	Time spent for SBIRT screening per visit (minutes)		Time spent for SBIRT intervention per visit (minutes)	
	Positive result	Negative result	Positive result	Negative result
Medical Assistant	1	1	1 - 2	0
Provider	2.5	0	0 - 15	0
Total Screening and Intervention Cost if Positive:				*Upper Level:* ***$11.6*** *Middle Level:* ***$4.0*** *Lower Level:* ***$2.1***
Total Screening and Intervention Cost if Negative:				***$0.35***

Screening and Intervention cost was lowest in July 2017 ($31) and highest in January 2017 ($137). Figure 11 presents screening and intervention cost at site B by month. Table 23 provides the number of screenings by month and associated cost.

Figure 11. Site B's alcohol-use screening and intervention cost by month – Middle level

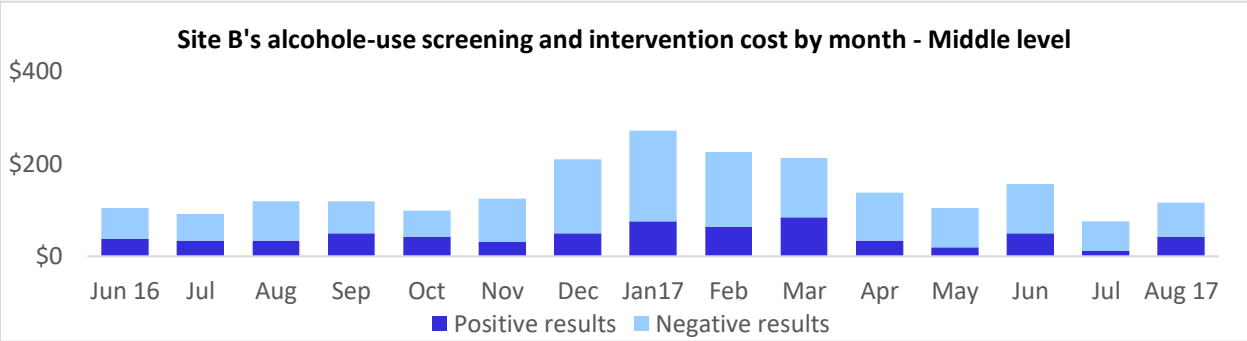


Table 23. Number of alcohol-use screenings and associated cost at site B

Month	Screened visits	Screened visits with positive result	Positive screening and intervention cost	Negative screening cost
Jun 2016	66	10	$40	$20
July	57	9	$36	$17
Aug	80	9	$36	$25
Sep	71	13	$52	$20
Oct	59	11	$44	$17
Nov	87	8	$32	$28
Dec	147	13	$52	$47
Jan 2017	183	20	$80	$57
Feb	151	17	$68	$47
Mar	130	22	$88	$38
Apr	95	9	$36	$30
May	76	5	$20	$25
Jun	102	13	$52	$31
Jul	57	3	$12	$19
Aug	73	11	$44	$22
Total (15 months)	**1,434**	**173**	**$692**	**$441**

Total Cost

Our calculation found the total cost of SBIRT at site B during the first 15 months to be **$4,827**, hence, ***$3.4*** per screened visit.

Table 24. Total SBIRT cost at site B from June 2016 to August 2017 (15 months)

	Pre-implementation	Training	Admin	Screening and intervention	Additional expenses
Total	**$594**	**$2,070**	**$853**	**$1,133**	**$177**
Per unit				$4.0 per visit with positive result $0.35 per visit with negative result	
Percent	12.3%	42.9%	17.7%	23.5%	3.7%

Societal benefits

Applying Fleming et al. (2000)'s benefit-cost ratio allowed us to estimate the potential benefit dollars generated by SBIRT. Table 25 presents societal benefits based on future cost reductions in healthcare utilization owing to SBIRT practices at site B.

Table 25. Societal benefit dollars generated from SBIRT at site B

Screening rate	Total SBIRT cost	Benefit – cost ratio	Benefit dollars generated from SBIRT
Current screening rate (26.8%)	**$4,827**	**3.2:1**	**$15,446**
Screening rate at 94.1%	**$7,691**		**$24,611**

Site C

Patient demographic and screening rates

At site C, the total number of eligible visits from November 2016 to October 2017 was 7,101. Of those, 3,459 were screened.

Screening rates

The average screening rate of all patient groups was 48.7%. The average screening rate for females surpassed that of males by 6 percentage points. In terms of age group, 18-64 years-old patients' screening rate was 5 percentage points higher than 65+ patients'. Among race groups, Asian had the highest average screening rate, followed by Others and White.

Table 26A. Eligible visits and screening rates by sex and age at site C

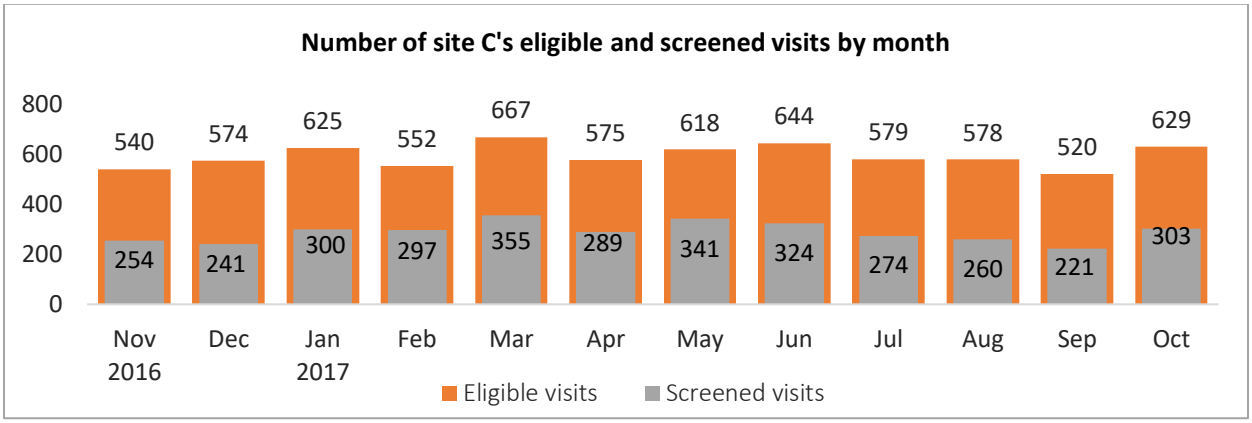
	Total	Sex		Age Group	
		Male	Female	18-64	65+
Eligible visit					
Count	7,101	2,117	4,984	5,016	2,085
Screening					
Count	3,459	937	2,522	2,522	937
% of eligible visits	**48.7%**	**44.3%**	**50.6%**	**50.3%**	**44.9%**
Positive screening					
Count	380	168	212	306	74
% of screenings	**11.0%**	**17.9%**	**8.4%**	**12.1%**	**7.9%**
Negative screening					
Count	3,079	769	2310	2216	863
% of screenings	**89.0%**	**82.1%**	**91.6%**	**87.9%**	**92.1%**

Table 26B. Eligible visits and screening rates by race at site C

	Race*				
	White	**Black**	**Asian**	**AIAN**	**Others**
Eligible visits					
Count	6,473	130	61	46	391
Screening					
Count	3,135	45	46	10	203
% of eligible visits	**48.7%**	**34.6%**	**75.4%**	**21.7%**	**51.9%**
Positive screening					
Count	355	3	0	0	22
% of screenings	**11.3%**	**6.7%**	**0%**	**0%**	**10.8%**
Negative screening					
Count	2,800	42	46	10	181
% of screenings	**88.7%**	**93.3%**	**100%**	**100%**	**89.2%**

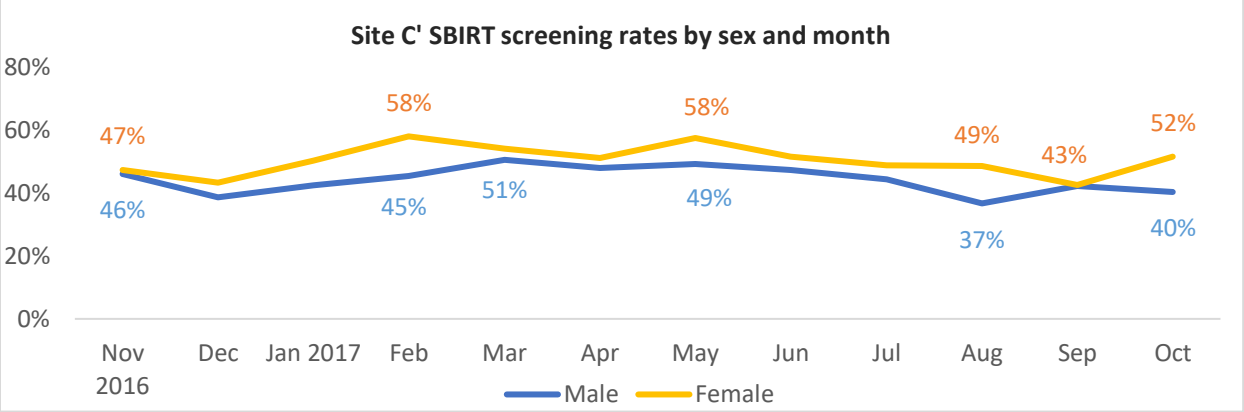
Note: Site C did not report Native Hawaiian/Pacific Islander as a racial category.

Figure 12. Number of site C's eligible visits and screenings by month



Screening rates were consistent and moderate for both males and females. Screening rates for females were higher than those of males in almost every month, by between 0.2 percentage points (September 2017) and 12.6 percentage points (February 2017). The screening rates for females ranged between 42.6% (September 2017) and 58% (February 2017). Screening rates for males ranged between 36.7% (August 2017) and 50.6% (March 2017).

Figure 13. Site C' SBIRT screening rates by sex and month

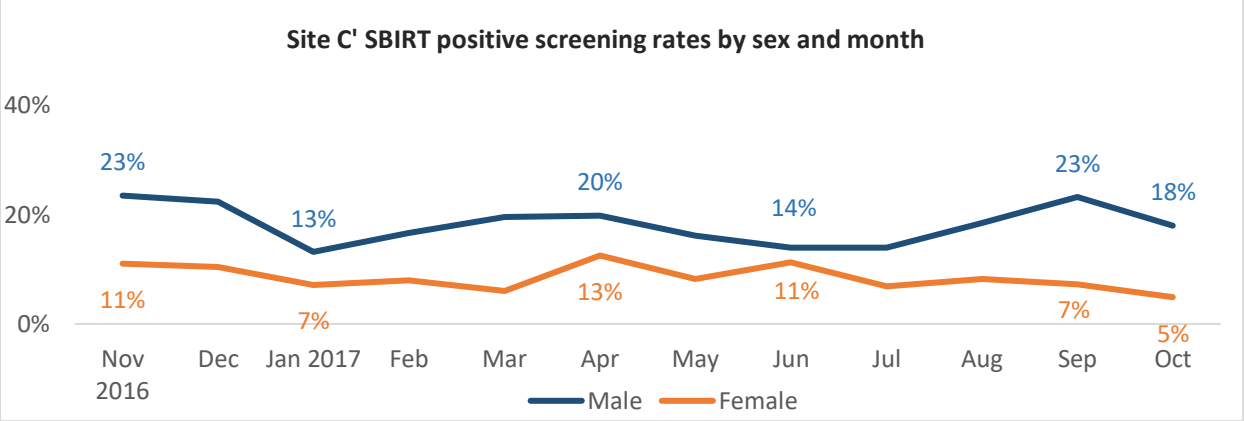


Positive Results

As showed in Table 26A and B, across all groups, 11% of screenings had positive results. Nearly 18% of male screenings resulted positive, which was twice as high as the rate for females. Compared to 65+ age group, 18-64 age group had over 4 percentage points higher in positive screening rate. Among all race groups, White received the highest percentage of positive results, at about 11.3%. None of Asian and American Indian/Alaska Native screenings resulted positive. It is important to note that White individuals comprise the 91.2% of eligible visits at site C.

Positive screening rates fluctuated across months for both males and females. Unlike the screening rates, the positive results were higher for males, by between 2.7 percentage points (June 2017) to 16 percentage points (September 2017). Male positive screening rates started high in November 2016 and peaked again in September 2017. Female positive screening rates peaked in April and June 2017.

Figure 14. Site C' SBIRT positive screening rates by sex and month



Cost of SBIRT

Start-up Cost

Pre-implementation

Table 27. SBIRT pre-implementation cost at site C

Position	Time	Hourly rate	Benefit rate	Cost
Clinic Director	16 hours	$75	25%	$1,500
Physician	1 hours	$115		$143
Medical Assistant	20 minutes	$23		$10
Total Pre-Implementation Cost:				***$1,653***

Training

Table 28. SBIRT training cost at site C

Position	Number of training attendees	Time	Hourly rate	Benefit rate	Cost
Admin	3	3.5 hours	$24 - $33	25%	$394
Behavioral Health Specialist	1		$26*		$114
Medical Assistant	4		$23		$403
Medical Doctor	2		$115		$1,006
Nurse Practitioner	2		$54		$471
Practice Manager	1		$22		$96
Registered Nurse	1		$44		$193
Total Introductory Training Cost:					***$2,677***

* *Wage information achieved from ALARI*

Additional Expenses

Table 29. SBIRT additional expense at site C

Additional expenses	Cost
Overtime paid to training participants	**$750**

***** The Clinic Director mentioned the cost of printing materials but wasn't able to provide an estimation.

Service-delivery cost

Administrative, meeting and contact

Table 30. SBIRT administration cost at site C

Position	Time per month	Months of implementation	Hourly rate	Benefit rate	Cost
Clinic Director	20 hours	12 months	$75	25%	$1,125
Total Pre-Implementation Cost:					***$1,125***

***** *Wage information achieved from ALARI*

Screening and intervention

Table 31. SBIRT screening and intervention cost per visit at site C

Position	Time spent for SBIRT screening per visit (minutes)		Time spent for SBIRT intervention per visit (minutes)	
	Positive result	Negative result	Positive result	Negative result
Medical Assistant	5 - 10	1	0	0
Provider OR Mid-provider	0 - 0.5	0	5 - 10	0
Total Screening and Intervention Cost if Positive:				
Upper Level: ***$12.7***				
Middle Level: ***$9.4***				
Lower Level: ***$6.2***				
Total Screening and Intervention Cost of Negative: ***$0.5***				
* The physician interviewee responded that he was not involved with SBIRT. Because we do not have the information about the involvement of the other physician at site C in SBIRT, we used Nurse Practitioner wage and time when calculating the intervention cost. Nurse Practitioner's participation in SBIRT was confirmed during follow-up conversation between researcher and clinic C.				

Screening and Intervention cost was lowest in September 2017 ($348) and highest in April 2017 ($515). Figure 15 presents screening and intervention cost at site C by month. Table 32 provides the number of screenings by month and associated cost.

Figure 15. Site C's alcohol-use screening and intervention cost by month – Middle level

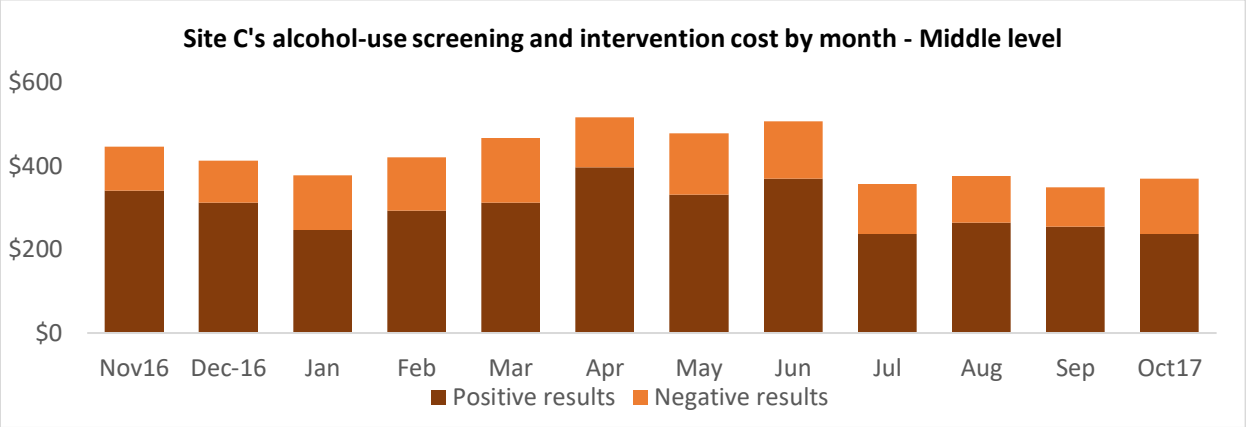


Table 32. Number of alcohol-use screenings and associated cost at site C

Month	Screened visits	Screened visits with positive results	Positive screening and intervention cost	Negative screening cost
Nov 2016	254	36	$340	$105
Dec	241	33	$312	$100
Jan 2017	300	26	$245	$132
Feb	297	31	$293	$128
Mar	355	33	$312	$155
Apr	289	42	$396	$119
May	341	35	$330	$147
Jun	324	39	$368	$137
Jul	274	25	$236	$120
Aug	260	28	$264	$111
Sep	221	27	$255	$93
Oct	303	25	$236	$133
Total (12 months)	**3,459**	**380**	**$3,587**	**$1,478**

Total Cost

Our calculation found the total cost of SBIRT at site C during the first 12 months to be **$11,270,** hence, ***$3.3*** per screened visit.

Table 33. Total SBIRT cost at site C from November 2016 to October 2017 (12 months)

	Pre-implementation	Training	Admin	Screening and intervention	Additional expenses
Total	**$1,653**	**$2,677**	**$1,125**	**$5,065**	**$750**
Per Unit				$9.4 per visit with positive result $0.5 per visit with negative result	
Percent	14.7%	23.8%	10%	44.9%	6.7%

Societal benefits

Applying Fleming et al. (2000)'s benefit-cost ratio allowed us to estimate the potential benefit dollars generated by SBIRT. Table 34 presents societal benefits based on future cost reductions in healthcare utilization owing to SBIRT practices at site C.

Table 34. Societal benefit dollars generated from SBIRT at site C

Screening rate	Total SBIRT cost	Benefit – cost ratio	Benefit dollars generated from SBIRT
Current screening rate (48.7%)	**$11,270**	**3.2:1**	**$36,064**
Screening rate at 94.1%	**$16,058**		**$51,386**

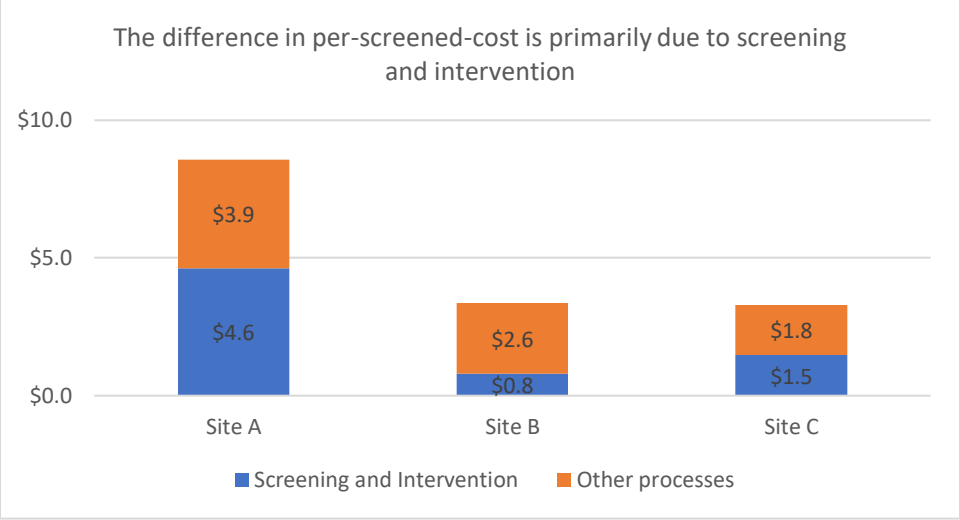
Discussion

Per screened visit cost

As explained earlier, our analysis does not distinguish between the first and repeated visits, and therefore, generates per-visit cost. This means all visits are treated the same way.

The difference in total costs among the three primary care practices is a function of site protocols and screening rates. Total cost per screened visit at site A, B, and C were $8.6, $3.4 and $3.3 respectively. To gain an insight in the gap of SBIRT cost among three practices, we looked at the cost per screened visit task-by-task. As shown in Figure 16, the difference in per-screened-visit cost is primarily due to *Screening and Intervention*, which accounted for 54.1% the total cost at site A, 23.5% at site B, and 44.9% at site C.

Figure 16. Per-screened-visit cost



Screening and Intervention cost of a visit increases with the duration of services and position of personnel involved in the encounter. Site A allocates a total of 19.5 minutes on patient with positive result and about 3 minutes on patient with negative result. In a more severe case, Behavioral Health Specialist will be involved for about 15 minutes, which costs about an extra $12.5. However, this method of intervention is not universal to all patients with positive screening. Meanwhile, site B allocates a total of 12.5 minutes on each positive case and only 1 minute per negative case. At site C, positive case received a total of 15.25-minute service per positive case and only 1 minute per negative case. Table 35 compares time allocation for *Screening and Intervention* activities and associated cost at three practices.

Table 35. Time allocation for Screening and Intervention activities and associated costs at three clinics

Processes	Unit		Site A	Site B	Site C
Screening and Intervention	Positive	**Time** $	**19.5 mins** $20.9	**12.5 mins** $4.0	**15.25 mins** $9.4
	Negative	**Time** $	**3 mins** $3.2	**1 min** $0.35	**1 min** $0.5
Screening	Positive	**Time** $	**6 mins** $4.8	**3.5 mins** $2.2	**7.75 mins** $3.8
	Negative	**Time** $	**0.5 min** $0.2	**1 min** $0.35	**1 min** $0.5
Intervention	Positive	**Time** $	**13.5 mins** $16.1	**9 mins** $1.8	**7.5 mins** $5.6
	Negative	**Time** $	**2.5 mins** $3.0	**0 min** $0	**0 min** $0

Screening rates and potential societal benefits

SBIRT screening rate was 94.1% at site A, 26.7% at site B and 48.7% at site C. Twelve point one percent of site B' screenings and 11% of site C' screenings received positive results. A higher screening rate presents a greater opportunity to identify and assure treatment for individuals who consume above low-risk limit but not yet considered dependent (Barbosa et al., 2015; Agerwala & McCance-Katz, 2012). Hence, we suspect the low screening rates could have underestimated the number of patients who could have potentially benefited from SBIRT. Using the 94.1% screening rate at Site A, we calculated potential SBIRT cost and societal benefit could be achieved at Site B and C if they were to improve their screening rates. Of note, increases in screening rates at facilities B and C would be associated with facility costs but significant societal benefits. Table 36 summarizes potential benefits of SBIRT at three practices.

Table 36. Screening rates and potential societal benefits generated by SBIRT

	Site A	Site B	Site C
Current benefit dollars	**$143,898**	**$15,446**	**$36,064**
Benefit dollars at 94.1% screening rate		**$24,611**	**$51,386**

Implications

We provide following implications to further interpret the study results and point out suitable approaches for future SBIRT development in Mat-Su area and Alaska.

- **Benefits to primary care may be realized in the longer term.** The full integration and sustainment of SBIRT within primary care settings require a substantial cost. While the commitment of time and financial resources might not been off-set by billing for SBIRT services, longer-term benefits related to improving patient outcomes and preventing chronic conditions caused or exacerbated by alcohol, should not be ignored.
- **Benefits related to addressing shortages in local treatment services.** By design, SBIRT promotes the integration between behavioral and physical health care, particularly in federally qualified health centers where behavioral health professionals are available on site.
- **Reducing healthcare utilization represents just one component among benefits of the screening and brief treatment for alcohol misuse.** Because quantifying the potential benefits generated in primary care in the short term is challenging, we examined SBIRT benefits related to overall healthcare utilization costs. The literature suggests considerable societal benefits accrued by SBIRT, particularly if primary care providers pay attention to maximizing patient reach. Other potential benefits in public safety and mental health services should also be examined to fully understand the potential impact of SBIRT.
- **Investment in primary care practices** to alleviate start-up costs may help clinics to address the barriers of SBIRT adoption, given the potential for downstream savings. Investment in infrastructure/system support, pre-implementation and booster training is likely necessary to maximize patient reach, provider and staff confidence and competence, and potential benefits. Providing opportunities for external funds to assist practices who are willing to implement SBIRT and reimbursement to those consistent with providing a brief intervention (i.e., one that is less than 15 minutes) may improve SBIRT uptake (Madras et al., 2009; Bradley et al., 2006). This offers a collaboration opportunity among Alaskan legislators, medical professionals and implementation researchers to take proactive measures that address financial barriers within primary care setting.
- **More research is needed to understand long-term returns** on investing in SBIRT within primary care settings, especially in the improvements recorded in chronic care as well as acute care management.

Conclusions

We compared the cost to implement SBIRT within 3 practice sites that used a similar approach to integrate SBIRT into their systems as a routine clinical practice. Costs varied across settings, primarily due to involvement level of personnel throughout the processes and screening rates. Even though our current research cannot speak for the causation between investment and screening rates, in our analysis, the site that invested more in pre-implementation planning and training, as well as spent more time on service-delivery during the implementation period saw considerably higher patient reach. While additional spending on SBIRT may produce diminishing returns over time, supporting a strong start-up to maximize patient reach and brief intervention effectiveness requires buy-in and involvement of staff at all levels of the organization. Moreover, it requires the commitment to monitor the processes, refine protocols and address staff training needs or resistance. Investing in a strong start-up is advisable. It is more important to note that the effectiveness of SBIRT and its potential benefits will fade away if practices fail to maintain an infrastructure that supports the delivery of SBIRT or to provide medical staff with skill training, especially those related to people turnover.

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Appendix A

MAT-SU SBIRT

Interview questions for Clinic Director

How much time you allocated for the following SBIRT processes?

Activity	Average hours per month or per week	Total hours per month or per week
Meeting/formal contacts (Meeting about SBIRT; including any set-up, preparation, travel time)		
Contacts (e.g., phone calls, emails, etc.)		
Administrative tasks (within your clinic administration, or between your clinic and UAA); Project activity coordination/management, budgeting, reporting, etc.		
Training (including any time travelling or set-up, preparation; Introductory training and advanced training)		
Pre-implementation activities (SBIRT policy and procedure development; Electronic Health Record programming, research, testing, and troubleshooting; Developing provider and patient support materials)		
Implementation activities (Process improvement and program-solving; Monitoring activities; Progress reporting/updates; Community outreach or other external activities related to SBIRT		
Data collection and reporting		
Other activities (not listed above)		

Based on your knowledge and experience, how much time in minutes your medical staff allocated on following SBIRT processes per visit?

	SBIRT Screening	SBIRT Intervention
Physician		
Nurse Practitioner		
Physician Assistant		
Medical Assistant/Other medical personnel		
Nurse		
Social Worker/Behavioral Health personnel		
Other employees not listed above		

How much time in minutes has SBIRT added to your documentation on average per visit?

When thinking about getting SBIRT started overall, how much of your time and effort has it taken compared to other new processes you implement as a clinic?

☐ A lot less ☐ About the same ☐ A lot more

Appendix B

Occupation codes and wages used for SBIRT cost calculation

Site A

Occupation	Wage (without benefit)	Wage source
Administrative Assistant	$23	*ALARI*
Clinic and Medical Director	$75	*Clinic director*
Dental Assistant	$15	*Clinic director*
Dental Manager	$72	*Clinic director*
Dentist	$72	*Clinic director*
Emergency Medical Assistant	$26	*ALARI*
Finance Manager	$53.4	*ALARI*
Fiscal and Billing	$17	*Clinic director*
HR Manager	$58.4	*ALARI*
IT	$23	*ALARI*
Licensed Clinical Social Worker	$40	*Clinic director*
Medical Assistant	$17	*Clinic director*
Nurse Practitioner	$55	*Clinic director*
Operations	$37.9	*ALARI*
Patient Services/Advocate/Coordinator	$15	*Clinic director*
Physician	$77	*Clinic director*
Physician Assistant	$55	*Clinic director*
Quality Assurance Manager	$24.4	*Clinic director*
Receptionist	$16	*ALARI*
Registered Nurse	$30	*Clinic director*
Social Worker	$22	*ALARI*

Site B

Occupation	Wage (without benefit)	Wage source
Behavioral Health Consultant	$29	*Project Manager*
Care Manager	$22	*Project Manager*
Director of Behavioral Health Services	$43.3	*Project Manager*
Medical Assistant	$17	*Project Manager*
Medical Director	$84.1	*Project Manager*
Nurse Practitioner	$38	*Project Manager*
Physician Assistant	$34	*Project Manager*
Practice Manager	$22	*Project Manager*
Project Manager	$18.5	*Project Manager*
Registered Nurse	$28	*Project Manager*

Site C

Occupation	Wage (without benefit)	Wage source
Clinic Director	$75	*Using similar position's rate at Site A*
Fiscal and Billing	$24	*Clinic Director*
Medical Assistant	$23	*Medical Assistant*
Nurse Practitioner	$53.8	*Clinic Director*
Patient Access Representative	$33	*Clinic Director*
Physician	$115	*Physician*
Practice Manager	$22	*Using similar position's rate at Site B*
Professional Counselor	$26	*Clinic Director*
Registered Nurse	$44	*Clinic Director*